Claim 1. A transmission having at least one input and one output and being of the epicyclic type involving interaction of three mechanically distinct rotating elements with any suitable form that allows the transfer of torque between input and output, namely a sun element, a ring element and a planet element in each of at least first and second unequal co-axial epicyclic assemblies, a first element of the first assembly and a first element of the second assembly able to rotate independently, the first rotating element of the second assembly able to be within the first rotating element of the first assembly, a second rotating element of the first assembly and a second rotating element of the second assembly being constrained to rotate at a common angular velocity, a third element of the first assembly being connected to a motive source, and control means for progressively changing the gear ratio applied to a load connected to the first element of the first assembly of the transmission characterised in that the first and second assemblies each represent unequal fixed gear ratios respectively between the input and the output of the "eM Dean" Gear, the first and second assemblies arranged so that if individually each assembly has their first element constrained and their third element rotated in a certain direction the second element will try to rotate in an opposite direction relative to the tendency of the other assembly, the control means being operative to progressively increase or decrease the output gear ratio in accordance with the demand for an output lower or higher gear stage of operation.

Claim 2. A transmission according to claim 1 wherein the first elements are the ring elements of the respective assemblies, the ring elements being outer bodies having spaced endless scallop guides being adapted to receive sets of planet elements being in the form of rollers, the second rotating elements comprising of planet carrier elements and planet elements, the planet carrier elements of the respective assemblies constrained to rotate about an axis collinear with the axes of their respective third elements, the planet carrier elements locating and controlling the motion of integral spaced sets of rollers corresponding to the planet elements of each assembly, the rollers bridging between the scallop guides of the outer bodies and the third elements of the assemblies, the planet carrier elements being constrained by a rotation controlling means allowing free rotation in one direction and a controlled rotation in the other direction, the third elements of the assemblies being sun elements in the form of respective cams.

Claim 3. A transmission according to claim 1 wherein the first elements are the ring elements of the respective assemblies, the second rotating elements comprising of planet carrier elements and planet elements, the planet carrier elements of the respective assemblies constrained to rotate about an axis collinear with the axes of their respective third elements, the planet elements constrained to rotate on their own axes

with the axes being constrained to rotate with the planet carrier element, the planet elements with their axes offset from their respective planet carrier element so as to bridge individually or in combination with other planet elements between the ring element and the third element of their respective assembly, the planet carrier elements being constrained by a rotation controlling means allowing free rotation in one direction and a controlled rotation in the other direction, the third elements of the assemblies being sun elements, the ring and planet and sun elements being in a form that will allow the transfer of torque at a fixed ratio between elements.

Claim 4. A transmission according to claim 2 wherein the first elements are the ring elements of the respective assemblies, the ring elements being outer bodies having spaced endless scallop guides being adapted to receive sets of planet elements being in the form of rollers, the second rotating elements comprising of planet carrier elements and planet elements, the planet carrier elements of the respective assemblies constrained to rotate about an axis collinear with the axes of their respective third elements, the planet carrier elements locating and controlling the motion of integral spaced sets of rollers corresponding to the planet elements of each assembly, the rollers bridging between the scallop guides of the outer bodies and the third elements of the assemblies, the planet carrier elements being constrained by a rotation controlling means allowing free rotation in one direction and a controlled rotation in the other direction, the third elements of the assemblies being sun elements in the form of respective cams, the control means being operable to supply a variable rotation to the third element of the second assembly across a continuous range of output gear ratios between low and high angular velocities at respective predetermined low and high output angular velocities.

Claim 5. The transmission according to claim 3 wherein the first elements are the ring elements of the respective assemblies, the second rotating elements comprising of planet carrier elements and planet elements, the planet carrier elements of the respective assemblies constrained to rotate about an axis collinear with the axes of their respective third elements, the planet elements constrained to rotate on their own axes with the axes being constrained to rotate with the planet carrier element, the planet elements with their axes offset from their respective planet carrier element so as to bridge individually or in combination with other planet elements between the ring element and the third element of their respective assembly, the planet carrier elements being constrained by a rotation controlling means allowing free rotation in one direction and a controlled rotation in the other direction, the third elements of the assemblies being sun elements, the ring and planet and sun elements being in a form that will allow the transfer of torque at a fixed ratio between elements, the control means being operable to supply a variable rotation to the third element of the second assembly across

a continuous range of output gear ratios between low and high angular velocities at respective predetermined low and high output angular velocities.

Claim 6. A transmission according to claim 2 wherein the first elements are the ring elements of the respective assemblies, the ring elements being outer bodies having spaced endless scallop guides being adapted to receive sets of planet elements being in the form of rollers, the second rotating elements comprising of planet carrier elements and planet elements, the planet carrier elements of the respective assemblies constrained to rotate about an axis collinear with the axes of their respective third elements, the planet carrier elements locating and controlling the motion of integral spaced sets of rollers corresponding to the planet elements of each assembly, the rollers bridging between the scallop guides of the outer bodies and the third elements of the assemblies, the planet carrier elements being constrained by a rotation controlling means allowing free rotation in one direction and a controlled rotation in the other direction, the third elements of the assemblies being sun elements in the form of respective cams, the first element of the second assembly constrained to a fixed frame of reference, a third element of the second assembly rotating at a controlled angular velocity the control means being operative to progressively increase or decrease the output gear ratio in accordance with the demand for an output lower or higher gear stage of operation.

Claim 7. A transmission according to claim 3 wherein the first elements are the ring elements of the respective assemblies, the second rotating elements comprising of planet carrier elements and planet elements, the planet carrier elements of the respective assemblies constrained to rotate about an axis collinear with the axes of their respective third elements, the planet elements constrained to rotate on their own axes with the axes being constrained to rotate with the planet carrier element, the planet elements with their axes offset from their respective planet carrier element so as to bridge individually or in combination with other planet elements between the ring element and the third element of their respective assembly, the planet carrier elements being constrained by a rotation controlling means allowing free rotation in one direction and a controlled rotation in the other direction, the third elements of the assemblies being sun elements, the ring and planet and sun elements being in a form that will allow the transfer of torque at a fixed ratio between elements, the first element of the second assembly constrained to a fixed frame of reference, a third element of the second assembly rotating at a controlled angular velocity the control means being operative to progressively increase or decrease the output gear ratio in accordance with the demand for an output lower or higher gear stage of operation.

Claim 8. A transmission according to claim 2 wherein the first elements are the ring elements of the respective assemblies, the ring elements being outer bodies having

spaced endless scallop guides being adapted to receive sets of planet elements being in the form of rollers, the second rotating elements comprising of planet carrier elements and planet elements, the planet carrier elements of the respective assemblies constrained to rotate about an axis collinear with the axes of their respective third elements, the planet carrier elements locating and controlling the motion of integral spaced sets of rollers corresponding to the planet elements of each assembly, the rollers bridging between the scallop guides of the outer bodies and the third elements of the assemblies, the planet carrier elements being constrained by a rotation controlling means allowing free rotation in one direction and a controlled rotation in the other direction, the third elements of the assemblies being sun elements in the form of respective cams, the first element of the second assembly constrained from rotating in one direction by a fixed frame of reference and free to rotate in the other direction.

Claim 9. A transmission according to claim 3 wherein the first elements are the ring elements of the respective assemblies, the second rotating elements comprising of planet carrier elements and planet elements, the planet carrier elements of the respective assemblies constrained to rotate about an axis collinear with the axes of their respective third elements, the planet elements constrained to rotate on their own axes with the axes being constrained to rotate with the planet carrier element, the planet elements with their axes offset from their respective planet carrier element so as to bridge individually or in combination with other planet elements between the ring element and the third element of their respective assembly, the planet carrier elements being constrained by a rotation controlling means allowing free rotation in one direction and a controlled rotation in the other direction, the third elements of the assemblies being sun elements, the ring and planet and sun elements being in a form that will allow the transfer of torque at a fixed ratio between elements, the first element of the second assembly constrained from rotating in one direction by a fixed frame of reference and free to rotate in the other direction.

Claim 10. A transmission according to claim 2 wherein the first elements are the ring elements of the respective assemblies, the ring elements being outer bodies having spaced endless scallop guides being adapted to receive sets of planet elements being in the form of rollers, the second rotating elements comprising of planet carrier elements and planet elements, the planet carrier elements of the respective assemblies constrained to rotate about an axis collinear with the axes of their respective third elements, the planet carrier elements locating and controlling the motion of integral spaced sets of rollers corresponding to the planet elements of each assembly, the rollers bridging between the scallop guides of the outer bodies and the third elements of the assemblies, the planet carrier elements being constrained by a rotation controlling means allowing free rotation in one direction and a controlled rotation in the other

direction, the third elements of the assemblies being sun elements in the form of respective cams, the third element of the second assembly being constrained to rotate at a respective fixed gear ratio relative to an input to the "eM Dean Gear, the control means being operable to supply a variable rotation to the first element of the second assembly across a continuous range of output gear ratios between low and high angular velocities at respective predetermined low and high output angular velocities.

Claim 11. A transmission according to claim 3 wherein the first elements are the ring elements of the respective assemblies, the second rotating elements comprising of planet carrier elements and planet elements, the planet carrier elements of the respective assemblies constrained to rotate about an axis collinear with the axes of their respective third elements, the planet elements constrained to rotate on their own axes with the axes being constrained to rotate with the planet carrier element, the planet elements with their axes offset from their respective planet carrier element so as to bridge individually or in combination with other planet elements between the ring element and the third element of their respective assembly, the planet carrier elements being constrained by a rotation controlling means allowing free rotation in one direction and a controlled rotation in the other direction, the third elements of the assemblies being sun elements, the ring and planet and sun elements being in a form that will allow the transfer of torque at a fixed ratio between elements, the third element of the second assembly being constrained to rotate at a respective fixed gear ratio relative to an input to the transmission, the control means being operable to supply a variable rotation to the first element of the second assembly across a continuous range of output gear ratios between low and high angular velocities at respective predetermined low and high output angular velocities.

Claim 12. A transmission according to claim 2 wherein the first elements are the ring elements of the respective assemblies, the ring elements being outer bodies having spaced endless scallop guides being adapted to receive sets of planet elements being in the form of rollers, the second rotating elements comprising of planet carrier elements and planet elements, the planet carrier elements of the respective assemblies constrained to rotate about an axis collinear with the axes of their respective third elements, the planet carrier elements locating and controlling the motion of integral spaced sets of rollers corresponding to the planet elements of each assembly, the rollers bridging between the scallop guides of the outer bodies and the third elements of the assemblies, the planet carrier elements being constrained by a rotation controlling means allowing free rotation in one direction and a controlled rotation in the other direction, the third elements of the assemblies being sun elements in the form of respective cams, the third element of the second assembly being constrained to rotate at a respective fixed gear ratio relative to an input to the transmission, the flow of a

suitably formulated fluid or gas or like due to the action of the first element of the second assembly against a fixed frame of reference being directed and controlled in two circuits, the flow of said suitably formulated fluid or gas or like from the said first element of the second assembly in the first circuit being directed and controlled towards the contracting spaces on one side of the rollers of the first assembly so as to tend to restrict the movement of the rollers within the scallops of the first element of the first assembly, the flow of said suitably formulated fluid or gas or like in the second circuit being directed and controlled towards a part of the a transmission that provides a low resistance to flow, the progressive control of the amount of flow of the said suitably formulated fluid or gas or like in the first and second circuits operable to progressively change the gear ratio applied to a load connected to the first element of the first assembly of the Variable Ratio Multi-gear.

Claim 13. A transmission according to claim 10 wherein energy can be transferred to the suitably formulated fluid or gas or like and stored internally or externally so as to enable the return of the energy to the load when required.

Claim 14. A transmission according to claim 2 wherein the first elements are the ring elements of the respective assemblies, the ring elements being outer bodies having spaced endless scallop guides being adapted to receive sets of planet elements being in the form of rollers, the second rotating elements comprising of planet carrier elements and planet elements, the planet carrier elements of the respective assemblies constrained to rotate about an axis collinear with the axes of their respective third elements, the planet carrier elements locating and controlling the motion of integral spaced sets of rollers corresponding to the planet elements of each assembly, the rollers bridging between the scallop guides of the outer bodies and the third elements of the assemblies, the planet carrier elements being constrained by a rotation controlling means allowing free rotation in one direction and a controlled rotation in the other direction, the third elements of the assemblies being sun elements in the form of respective cams, the rotation of the third elements causing motion of the second rotating elements, the motion of the second and third elements causing contracting and expanding spaces, the contracting spaces in the first assembly displacing a suitably formulated fluid or gas or like, the displaced fluid or gas or like being directed into and controlled in two circuits, the control means proportioning the flow of said suitably formulated fluid or gas or like in the said two circuits in accordance with the demand for an output lower or higher gear stage of operation, the flow of said suitably formulated fluid or gas or like in the first circuit being used to rotate the third element of the second assembly, the flow of said suitably formulated fluid or gas or like in the second circuit being directed and controlled towards a part of the transmission that provides a low resistance to flow, the suitably formulated fluid or gas or like being drawn into the

expanding spaces of the first assembly in a controlled manner after completing the first or second circuits, the progressive control of the amount of flow of the said suitably formulated fluid or gas or like in the first and second circuits operable to progressively change the gear ratio applied to a load connected to the first element of the first assembly of the Variable Ratio Multi-gear.

Claim 15. A transmission according to claim 12 wherein energy can be transferred to the suitably formulated fluid or gas or like and stored internally or externally so as to enable the return of the energy to the load when required.

Claim 16. A transmission according to claim 1 wherein the axis of the input or inputs are collinear with the axis of the third element of the first assembly, the axis of the output or outputs are collinear with the axis of the third element of the first assembly, the axis of the third elements of the first and second assemblies are collinear, the elements of both assemblies supported directly or indirectly by the fixed frame of reference, the motive source supported directly or indirectly by the fixed frame of reference, the reactive torque from the motive source acting on the fixed frame of reference.

Claim 17. A transmission according to claim 1 wherein the axis of the inputs are collinear with the axis of the third element of the first assembly, the axis of the output or outputs are collinear with the axis of the third element of the first assembly, the axis of the third elements of the first and second assemblies are collinear, the elements of both assemblies supported directly or indirectly by the fixed frame of reference, a motive source supported directly or indirectly by the fixed frame of reference and connected to the third element of the first assembly, another motive source supported directly or indirectly by the fixed frame of reference and connected to the third element of the second assembly, the reactive torques from the motive sources acting on the fixed frame of reference.

Claim 18. A transmission according to claim 1 wherein the axis of the inputs are collinear with the axis of the third element of the first assembly, the axis of the output or outputs are collinear with the axis of the third element of the first assembly, the axis of the third elements of the first and second assemblies are collinear, the elements of both assemblies supported directly or indirectly by the fixed frame of reference, an input driven by external influences such as wind connected to the third element of the first assembly, another input source driven by external influences and connected to the third element of the second assembly.

Claim 19. A transmission having an input and two contra-rotating outputs and being of the epicyclic type involving interaction of three mechanically distinct rotating elements with any suitable form that allows the transfer of torque between input and output, namely a sun element, a ring element and a planet element being in each of

at least first, second and third co-axial epicyclic assemblies, a second rotating element of the first assembly and a second rotating element of the second assembly being constrained to rotate at a common angular velocity, the first element of the first assembly and the first element of the third assembly being constrained to rotate at a common angular velocity, and control means for progressively changing the gear ratio applied to a load connected to the first element of the first and third assemblies and another load connected to the second element of the third assembly of the Variable Ratio Multi-gear characterised in that the first and second assemblies each represent unequal fixed gear ratios respectively between the input and the output of the Variable Ratio Multi-gear the first and second assemblies arranged so that if individually each assembly has their first element constrained and their third element rotated in a certain direction the second element will tend to rotate in an opposite direction relative to the tendency of the other assembly, the third assembly arranged so that if individually it's first element is constrained and the third element rotated in the same certain direction of the first and second assemblies the second element will tend to rotate in the same direction as the second assembly, the control means being operative to progressively increase or decrease the output gear ratios in accordance with the demand for an output lower or higher gear stage of operation.

Claim 20. A transmission according to Claim 1 wherein more elements can be included to provide overdrive speed and directional reversing features to a load coupled to the first element of the first assembly.

Claim 21. A transmission according to Claim 1 wherein the rotation blocking and controlling means required can provide energy storage able to be re used, with mechanical or pressure accumulation.

Claim 22. A transmission according to Claim 1 wherein the rotation blocking and controlling means can provide motor braking by automatically reversible one way clutches working in sequence for internally accessing carrier or ring-gear restricting.

Claim 23. A transmission according to Claim 1 where the compact "Torque Multiplier" action may be accessed by sequentially controlling the storage of energy, internally or externally.

Claim 24. A transmission according to Claim 1 where the control of the load and with internal or external remote control such as between the first and the second and third elements of the second assembly can be activated by electro-magnetic, magnetic fields, or electro high voltage to activating suitable contents such as Liquid Polymers in Silicon oil .

Claim 25. A transmission according to Claim 1 where reactive feedback from the load is used to automatically stabilise mobile transport.

Claim 26. A transmission according to Claim 1 where sophisticated electronic sensors are placed in strategic positions such as gravitational and tilt Sensors used to incorporate self stabilising to over ride mechanically fed back reaction from tilting of vehicles.

Claim 27. A transmission according to Claim 1 where multiple configurations of this Gearing can be linked together to perform three dimensional manipulation such as to interact and integrate the Camber Control with the Caster control as shown in Fig 5 (lower) and Fig 12 with reference to Fig 30

Claim 28. A transmission according to Claim 1 where a number of cages able to rotate about the first axis and each cage wholly or partially enclosed by the body, means between the central shaft and any number of the cages, means between the body and any number of the cages, means between the cages in any sets of combinations of any of the cages, wherein each input and each output is applied to or taken from one of the body, the central shaft and any number of the cages, and application of a first torque to the central shaft causing the central shaft to rotate about the axis while torques are applied, about the first axis, to any number of the cages will cause at least one of the cages, cams (sun-gears) and the body to rotate and, furthermore, variation of one of the torques between zero and a maximum value will cause a variation of the ratio of the angular velocities of the central shaft and the body through the actions of the means.

Claim 29. A transmission according to claims 1 to 30 substantially as described herein

Claim 30. A transmission according to claims 1-34 substantially as described herein with reference to any one or more of the accompanying drawings.

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